



The fundamentals of fatigue recovery

Guest: Dr. Sarah Myhill

Disclaimer: The contents of this interview are for informational purposes only and are not intended to be a substitute for professional medical advice, diagnosis, or treatment. This interview does not provide medical advice, diagnosis, or treatment. Always seek the advice of your physician or other qualified health provider with any questions you may have regarding a medical condition.

Alex Howard - [00:00:15]

Welcome, everyone, to this session where I'm really happy to be talking with Dr. Sarah Myhill. Firstly, Sarah, welcome and thank you for joining me.

Dr. Sarah Myhill

It's a privilege. It's an honor. You always ask all the right questions. And I love being interviewed by you, Alex.

Alex Howard

Very kind of you, one tries.

Well, it's always a pleasure for me as well, Sarah because you're, I think, one of the great pioneers of really understanding the complexity of these conditions. And you're someone whose work I followed for many years. And I always very much enjoy our conversations.

Just to give people a bit of a background on Dr. Sarah Myhill. Dr. Sarah Myhill worked with the NHS for 20 years before entering into private practice. She was the honorary secretary for the British Society for Allergy and Nutritional Medicine for 17 years and has worked with over 5000 patients with fatigue.

She's the author of the books '*Diagnosis and Treatment of CFS and ME, Its Mitochondria, not Hypochondria*', which I think is a great, great line. '*Prevent and Cure Diabetes*' and '*Sustainable Medicine*'. She's also the author with colleagues of three scientific studies, there might be a few more actually, this is a slightly outdated bio here, in the '*International Journal of Clinical and Experimental Medicine*' showing that the level of mitochondrial dysfunction correlates with the degree of fatigue. And we will get into that research a little bit later in this conversation.

So, Sarah, I think we have to start at the beginning here. Why is fatigue, sort of the broadest definition of fatigue, why is it such a mystery to mainstream medicine? Why do people have these experiences of going to doctors and basically walking out thinking they're the crazy one?

Dr. Sarah Myhill

The problem with conventional medicine is it has lost its scientific basis. It no longer asks the question why? It no longer asks for mechanisms. What is the mechanism by which this person has become fatigued? And modern medicine has been reduced to simple algorithms which suppress symptoms. So if you've got high blood pressure, you get drugs to bring down blood pressure. If you have headaches, you get given painkillers, if you have arthritis, you get given anti-inflammatories. There is no thinking that goes into conventional medicine. And nowhere is this worse than the area of fatigue because they don't even have any drugs whatsoever to treat fatigue. And so patients get pushed away through doctor ignorance. And many of them, as I describe it, end up on the psychiatric rubbish heap. They're not psychiatric patients. I say this groups that's putting them away. And thankfully, there

are a few therapists like yourself and myself who are starting to say, no, we need to look at the mechanisms. We need to ask the question why. That doesn't mean to say I know all the answers. I promise you I don't. At least we're asking the right questions. And then when possible solutions do become apparent, they leap out at you as a physician.

Alex Howard - [00:03:17]

From your perspective, what is actually fatigue? I mean, there's obviously, fatigue is a very big label that includes ME, chronic fatigue, fibromyalgia, Lyme disease, long-COVID we can say at this point, there are similarities and differences, but how do you sort of unpack all those different labels and diagnoses?

Dr. Sarah Myhill

The key point here is that fatigue is not a diagnosis, it's a symptom. And it's a very important symptom indeed. The point here being is we have a certain bucket of energy to spend in the day. If you spend more energy than you have in that bucket, you will die. You will die because you don't have the energy to power your heart, to power your brain, to power your liver and so on. And so the brain and the body knows exactly how much energy is there in the bucket, and if we start to spend more energy than we have got, it starts to give us symptoms because it realizes that the gap between energy available and energy expenditure is starting to narrow. And that is the dangerous bit. As I say, it's like a bank that we are drawing money from. We cannot go into the red, if you go into the red you die.

So fatigue is a symptom that has to be respected, not just masked with drugs. In fact, people often use addictions like amphetamines, like cocaine, like ecstasy or caffeine even to mask that symptom. And in the short term, yes, you feel, I've got more energy, but it's short-term gain, long-term pain it's a very dangerous policy.

Alex Howard

And it's an intelligence in the body. It's actually a sign of something working, not a dysfunction, although there may be dysfunction underlying it. The symptom has a wisdom within it.

Dr. Sarah Myhill

Correct, it's a symptom that we have to pay attention to. And because it's such an unpleasant symptom, it presents with physical fatigue. You physically can't go. It may be present with mental fatigue, you can't think clearly, foggy brain. Maybe it presents with muscle pain, which is lactic acid build up in the muscles. They're deeply unpleasant symptoms. And so they make us change our behavior. They make us go to bed, they make us rest, they stop us working because to push on through, you risk death. That's the dangerous option.

Alex Howard

So let's start to unpack a little bit. That symptom of fatigue, something that you've written extensively about and you've published I think some really very important research on, is our mitochondria. Effectively our cellular energy production. What's going on there?

Dr. Sarah Myhill

OK, well, the starting point for treating anybody with fatigue is to look at energy delivery mechanisms. Mitochondria is just one player. The analogy I love to use is the car analogy. We've all got a rough idea how a car works. With your car you've got to have the right fuel in the tank. And that means diet and gut function. You've got to have the mitochondrial engine, which takes fuel from the tank, burns in the presence of oxygen to generate energy. And then you've got to have the thyroid accelerator pedal and the adrenal gearbox. And those are the four key players that I start off with because they say the starting point in all of these syndromes is to make the energy bucket as large as we possibly can.

But again, thinking about terminology, chronic fatigue syndrome, fatigue, that is the symptom we have when energy delivery mechanisms are impaired in some way. And then we have, you mentioned ME and Lyme and so on, those are the clinical pictures that arise when the immune system is activated. When the immune system is activated for reasons of allergy, for reasons of autoimmunity, for reasons of chronic infection which might be viral, bacterial or fungal, when the immune system is activated, that causes inflammation. Inflammation is also a very nasty symptom. It's what we need to deal with infection. It's characterized by the five pathological characteristics, heat, redness, swelling, loss of function, pain. Inflammation is painful.

So our ME patients, our fibromyalgia patients, they have inflammation and they also have chronic fatigue syndrome. They have the two things. Obviously there are lots of links between the two. But if we can think of them in that logical frame, it does clarify those muddy clinical waters. And of course, Lyme disease is one cause of inflammation. It's a bacterial driver of inflammation, a very common cause of inflammation is chronic Epstein-Barr infection, and that's a viral driver of inflammation. And I came into this business through my interest in allergies, allergies is a useless inflammation, to foods, to inhalants, to chemicals maybe, and that too drives inflammation. And increasingly a major source of inflammation, I now know, is allergy to microbes from the fermenting gut.

Now, let's just break that down, because it's such an important concept. Yes, our gut is full of microbes. We know that. We were taught that at medical school. We were taught in medical school, that there in the gut those microbes remain. And we now know that's not true. Some of those bacteria, some of those fungi, some of those viruses do get from the blood, from the gut into the bloodstream. The best example is, if you brush your teeth, and I took a blood test from you a minute later, I would find dental bacteria in your bloodstream. So they do easily get into the bloodstream.

If our gut is good and we've got a normal microbiome and it's friendly microbes in that gut, they get into the bloodstream. The new system says, I'll be looking at those microbes for the last 100 million years, they're goodies, they're fine, we can let them just be peed out in urine, no problem at all. But if they are unfriendly microbes, that the immune system is not familiar with because they've appeared recently, then that will drive inflammation at this site. And I now know that many cases of arthritis is allergy to microbes and the fermenting gut, ditto fibromyalgia, ditto chronic urticaria, ditto venous ulcers, intrinsic asthma, possibly even psychosis. So the inflammation side, we again, we have to say, is this inflammation and what is driving it?

Alex Howard - [00:09:49]

And can you also explain how when there is that inflammation, how that's then also triggering fatigue?

Dr. Sarah Myhill

Because when the immune system is attacked it uses a huge amount of energy, I mean the immune system is our standing army and we know what it is to have a standing army it's an expensive business. It uses a lot of raw materials and a lot of energy. And we need that standing army in anticipation of an attacker, of a viral attacker, a bacterial attacker, a fungal attacker and when that attack comes we want our standing army to leap into action, to fight with all it's got. And in the process of that, we run a fever, we get hot and we are acutely fatigued because the whole energy of the country, of our body is going through our immune army to fight off that attack. And hopefully that attack is successful, the immune system then goes back to the resting mode again and we recover.

But what happens? Yes what happens if there's civil war? And civil war is autoimmunity, civil war is allergy. Well, guess what happens if there's an ineffective attack against that invader and it becomes part of our, part of us, the immune system is permanently activated. And the immune system uses vast amounts of energy, which means the immune system is using up all our energy, then you don't have energy left for a life. So not only do you feel terrible because you've got all that inflammation going on that might be manifesting in your muscles, in your joints, in your brain or whatever, but you haven't got energy to have fun, you haven't got energy to hold down a job, you haven't got energy to go for a walk.

Alex Howard - [00:11:33]

And again, it's a sign of the wisdom of your body. It's prioritizing the survival because it's at war over having the energy for those other things. Again, it's not crazy. It's actually, it's wise.

Dr. Sarah Myhill

It's totally appropriate inflammation. Having said which, there's no question you do get to a state where the inflammation is inappropriate. Maybe not focused, it's maybe inappropriate. For example, having allergic reactions to foods is pretty dull. The very things we need to nourish us and the immune system thinks it's a foreigner. That's a bad thing. Autoimmunity, the same, having inflammation against your own thyroid gland or your own stomach lining or your own liver, that's a pretty rotten thing to do. It's a dullness because A) you're using up energy fighting yourself and then you have to heal and repair and guess who does the healing and repairing, the immune system. So, as I say, I think that's a civil war and that absolutely gets a thumbs down.

And we see epidemics of autoimmunity. At the moment about one in 20 of the population is estimated to be autoimmune. What are the three biggest drivers of that? Number 1 is vaccination. And so many of my ME patients it triggers, has been triggered by vaccination. And one of the things that hugely concerns me about this vaccination role out is we are going to get epidemics of long-COVID triggered by vaccinations. The vaccination number 1.

Number 2, vitamin D deficiency. Vitamin D deficiency is pandemic. We should all be taking vitamin D.

Alex Howard

But particularly in countries like the U.K. where the sun doesn't shine very much.

Dr. Sarah Myhill

We all need sunshine. And I'm looking at the temperature out there. Are you going to find me out there in my bikini today? Not because it's not a pretty sight.

Alex Howard

I imagine in Wales it's probably about zero right now is it? Or sort of about -1, -2.

Dr. Sarah Myhill

Or even minus, yes.

Alex Howard

You were saying that there were three, you were saying that..

Dr. Sarah Myhill

And Western diets are pro-inflammatory. It's sugar, it's carbohydrates, it's gluten, it's dairy products. All these things put us into a pro-inflammatory state. So, we live in a pro inflammatory world.

Alex Howard

Yeah. So that being the case, let's then kind of come a bit more specific into the mitochondrial piece.

Dr. Sarah Myhill

OK, well, your mitochondria to function normally, there are several factors. First of all, they've got to have the right fuel in the tank and the preferred fuel of mitochondria are ketones. And that's why ketogenic diet is such a helpful addition. In fact, you put, if you give athletes the ketogenic diet, you

can improve their performance. And we're talking here about the middle distance runners, you know, the long distance runners, not the sprinters and the weightlifters, the endurance athletes. They can improve their function by between 10 or 15 percent by doing a ketogenic diet. In fact, the world record for the furthest distance run in 24 hours is held by Mike Morton, who is a keto adaptive athlete and in 24 hours he ran 172 miles. He didn't have to eat, he had to drink, of course, fluids, but he put in a great performance on that occasion. But we have to have the right fuel in the tank.

Second point is mitochondria need the raw materials in order to function. Now, as you mentioned, together with John McLaren-Howard from Acumen Laboratories, well, I say together, John McLaren-Howard from Acumen Laboratories invented or developed a mitochondrial function test, which is a fabulously useful tool. Now, since that test started I've now done 1,036 of them, and I've collected all the information from those tests and many patients had follow up tests. And I now know beyond a shadow of a doubt, what are the commonest five rate limiting steps. And so the point here is we can't access those tests at the moment because of COVID, but it doesn't matter. You can still get well without the test.

Alex Howard - [00:15:46]

And Sarah, just before you come into those files, I just want to back up a little bit. I'm just mindful that for those that don't know what the mitochondria are or don't understand, we just give a minute or two explanation just so we don't lose people at this point.

Dr. Sarah Myhill

Mitochondria are the engines of our car. They are a biological unit common to all cells in the whole of the natural world. So my dog, me, the grass, the trees out there, the way we generate energy is with mitochondria. Think of them as a little engine. In the car world we have diesel engines and we have petrol engines, but we don't have that, we just have mitochondria and they are incredibly efficient engines. We can, from one molecule of ketones or glucose, mitochondria will generate 32 to 36 molecules of ATP. If you're a yeast cell and you're fermenting, you'll only make two molecules of ATP.

ATP is the energy molecule. I think of ATP as money and if you've got a plentiful supply of money, you can buy any job in the body. You can contract a muscle, conduct a nerve, digest, make hormones, replace bone and muscle or whatever. Mitochondria are absolutely fundamental part of life and go right back to the beginning of time. But for mitochondria to work it needs essential raw materials. And as I say, there are five common rate limiting steps. They need the right fuel in the tank, ketones. They have to be free from toxic stress. If you poison your mitochondria with organophosphates, with pesticides, with heavy metals, with mycotoxins, then they will go slow. And then they need the right control mechanisms.

So as I say, you could have Lewis Hamilton in his Formula One car with the perfect mitochondrial engine, the perfect keto fuel in this tank, but if he doesn't work the accelerator pedal and he can't move out of first gear, he ain't going anywhere. So you have to have the thyroid accelerator pedal and the adrenal gearbox and then you have the control because those hormones, they manifest through their effects on mitochondria. They increase energy delivery mechanisms and essentially thyroid hormones baseload. Thyroid hormones allow your car to float along in a nice, comfortable 56 miles an hour and you're really going places.

Then adrenal hormones adjust the speed of that according to demand. So when you want to go a bit faster you've got to nip past that other car. Then there'll be an outpouring of adrenaline and cortisol, DHEA to allow that to happen, and then you'll drop back to the normal rate again. And then again at night when we need sleep and the levels of adrenal hormones decline and the mitochondria shut down and we cool down, and that process of cooling down allows us to sleep. So the second to second, minute to minute, day by day control of mitochondria function is overseen by the adrenal glands.

Alex Howard - [00:18:44]

And you mentioned sleep, one of the things that can happen is when the hormones get out of balance, people can find they're utterly exhausted all the time, but they can't sleep. And so they end up in this very vicious circle.

Dr. Sarah Myhill

Lack of sleep is an absolute disaster. And we all need quality sleep every 24 hours because it's during sleep that we heal and repair. You can't move around and do things without damaging yourself. You're damaging your joints, damaging your muscles, whatever. And I say, all living creatures, even microbes, even bacteria have a window of time when they shut down to allow healing and repair. Dolphins which swim, they shut down one half of their brains at a time and then they shut down the other half because they can never sleep.

Alex Howard

It's amazing right.

Dr. Sarah Myhill

And apparently swifts do the same, I didn't know that. Swifts live on the wing and they can do the same thing. But we have to have that window of time of sleep for healing and repair and it has to be good quality sleep for that to happen. And sleep will be impacted on by, our diet, and be impacted on by our hormones. And what's more, the inflamed brain doesn't sleep and the toxic brain doesn't sleep. So all these things that we are doing, correcting the diet, correcting the mitochondria function, sorting out the adrenals and the thyroid glands, detoxing, attacking inflammation, all these things will impact on sleep.

But over and above that, there are some very simple sleep hygiene things that we can all do from the very beginning. And there is a natural, obviously circadian rhythm which is determined by light. Now, I'm incredibly privileged. I work in my conservatory, so I have natural light all around me. And that natural light is essential for setting off our biological clock. Artificial light doesn't do it. Light stops us producing melatonin and melatonin is the sleep hormone. As it starts to get dark, melatonin builds up in the body. And when it gets to a critical level that initiates, oh yeah we're feeling tired, we need to go to sleep. As melatonin builds up, it starts to kick.

And that comes from the pineal gland in the brain, that starts to kick the pituitary gland into life. And about midnight, our levels of thyroid stimulating hormone will spike, will peak. Thyroid stimulating hormone then passes to the thyroid gland in the neck. And that stimulates that. At about 4 o'clock in the morning levels of T4 thyroxine will spike. T4 is slowly converted to T3 and T3 is the active hormone. And at about 5 o'clock in the morning levels of T3 will then spike, T3 then drops down the adrenal glands and gives that a kick. And so, at about 6 or 7 o'clock in the morning, levels of adrenaline and cortisol spike and that's what wakes up.

So you can, just think of the potential for things to go wrong there. If we don't get full spectrum light, if we're not sleeping in good darkness, the pineal gland isn't functioning very well, or maybe the pituitary, maybe damaged by head injury or stroke or even poison. We need a good thyroid gland that's in a good fit state to respond to those stimuli and the adrenal glands. And if those thyroid glands and adrenal glands are exhausted by stress. That's going to impact. So this is why sleep is susceptible to so many malign inputs. And sometimes it's not way down the line that good sleep is really established. And guess what the converse is also good. Very often if sleep starts to go down for reasons of maybe childhood bullying, maybe emotional trauma, maybe post-traumatic stress and sleep is impacted, then of course, we can no longer heal and that whole general health goes down too. If you really dig in the history, so often that history of insomnia dates back from an early age.

Alex Howard - [00:22:41]

Yeah. And I think also people can often think with sleep, Oh, well, sleep is just about learning how to get my mind to switch off, to go to sleep, which it can be. But often there's a whole bunch of biological processes that could be part of this picture as well.

Dr. Sarah Myhill

Absolutely.

Alex Howard

You've been exploring hormones and we touched on inflammation and immunity. Can you talk a bit about the role of the gut and why digestion is so important?

Dr. Sarah Myhill

Okay, well, we've actually done things backwards because I always start there. And the point is, what is critical for gut function is what you eat. Now, the normal gut is almost, the human gut is almost unique in the mammal world because we can eat such a wide variety of foods. Now, this little girl sitting on my shoulder here, Nancy, my best friend, she's a dog and she's a carnivore. She just eats meat. And the carnivorous gut is a sterile, acidic digesting gut. And our upper gut is a carnivorous gut. It should be near sterile, it's kept sour by stomach acid and it is there to digest meat and fat. And then the lower gut, like my horse. My horse eats grass as fiber. The lower gut the large bowel is a fermenting gut and it is full of kilograms of microbes to deal with fiber.

And what that means is, the diet we should be eating should be high in fat and protein and high in fiber. That's the ideal diet. But the problem with modern diets is there's too much carbohydrates in them. And this switch came in the 1970s, early 1980s, when suddenly there was the prevailing wisdom that, oh, no, no, no carbohydrates are the healthy foods. And instead of going to work on an egg, you should have porridge or toast or cereals for breakfast and even worse. And then if you get hungry in the day, when you need a snack, you need a Mars bar or a biscuit or whatever. And that is a disaster for our gut.

And the reason for that is if you have this high carbohydrate load in the stomach, you overwhelm its ability to digest it. And then the microbes move in and start fermented and you end up with an upper fermenting gut. And it might be fermentation by bacteria, it might be fermentation by yeast, but that is metabolic disaster for many reasons. The first reason is that, what do they ferment to? Well they're fermenting to produce products like alcohol, lactate, hydrogen sulphide and all these are toxic, all these are poisonous. And many of my patients have foggy brains because they have fermenting guts. It's called the auto-brewery syndrome. If you gave me a glass of wine at breakfast, I wouldn't get anything done in the day.

The second problem is the products of the gut, the digestive products of the gut go via the portal vein and they all go to the liver. The liver has to deal with this toxic mess. And for the liver it's not just alcohol and lactate and [inaudible]. It's also bacterial endotoxins, it's fungal mycotoxins because these microbes are flourishing in the gut. And the liver uses a vast amount of energy to deal with that toxic load and raw material. In fact, at rest, this is an astonishing statistic, at rest, the liver consumes more energy than the heart and the brain put together.

Alex Howard

Wow. That's something.

Dr. Sarah Myhill

Massive amounts go to deal with that toxic products in the fermenting gut. And the other problem is that if you eat some vitamins and some minerals and you're dropping them into a fermenting gut, you don't get them, the fermenting microbes take them because they're first in the queue. And we know

that with a fermenting gut, there will inevitably be deficiencies, B vitamins, essential fatty acids of micronutrients. And this is all established by Keith Eaton, dear colleague and friend of mine, decades ago.

Alex Howard - [00:26:45]

It's worth saying what then the impact of that is, so if one has a fermenting gut and therefore not absorbing those vitamins and minerals, for example, B vitamins, which we know are enormously important for all kinds of functions, how does that then impact upon the fatigue picture?

Dr. Sarah Myhill

Well, everything goes down because those raw materials are the very materials we need for our car to work. The thyroid can't work, the adrenals can't work, the mitochondria can't work, the liver can't work, nothing works without those essential raw materials. And so many people come to me and they say, oh, I've been taking all these supplements for years and they're not doing any good. And the reason for that is simple. They've got a fermenting gut. They're just feeding the microbes in the gut and they are therefore fermenting even harder and that's more toxic. Of course, some goodness will be getting into the bloodstream, but you're massively compromising your ability to digest and absorb efficiently.

And again, when you've got those fermenting microbes in the gut that drives pathology and we know *Helicobacter pylori* causes gastric ulcers. We've seen epidemics of refluxes, gastroesophageal reflux, and that's all driven by the fermenting gut. And I have no doubt esophageal cancer, stomach cancer and bowel cancer all have to do with this abnormal microbiome. Sorting that out is of vital importance.

Alex Howard

So that's a good place where I want to start coming to some of the practical things that folks can do and some of the ways that you are approaching working with people. So you said a little bit earlier, you tend to start with the gut. Someone comes in with a fermenting gut. What do they do? What are the sort of steps that you would begin to go through?

Dr. Sarah Myhill

The principles of the fermenting gut very, very simple. The first thing you do is you starve the little wretches out, stop feeding them. What are they fermenting? Sugars and carbohydrates. So we start off with a low carbohydrate ketogenic diet. And for some people, that might mean a fast, really get ahead of the game, although we have to be careful about fasting with patients who are very sick. For some people, it might be a GAPS diet, this was developed by my dear friend and colleague Natasha Campbell-McBride and her book *'The GAPS Diet'*, has sold hundreds of thousands of copies all over the world. Sometimes you have to do that to get ahead of the diet.

But most people, the paleo ketogenic diet is a reasonable start, which is high fat, high in protein, high in fiber, high in calories and low, very low in carbohydrates. And the point there is, is you then starve, I say starve the wretches out and then you kill them with vitamin C. And the joy of using vitamin C is, it's very cheap, everybody can afford it, it kills, contact kills all microbes, all bacteria, all yeast, all viruses. And in addition, vitamin C is one of my favorite multitasking tools. It doesn't just sort out the fermenting gut. It's a fantastic protection against chronic infection. It helps us to detox heavy metals. It's one of the most important antioxidants in the body. So if people listening today do nothing more that go away with the determination, do a paleo ketogenic diet and take vitamin C for bowel problems, they will be doing themselves a big favor.

Alex Howard

And I suppose also with the caveat that people should listen to their own body and experience. You mentioned some of the more sick patients or indeed patients that have a lot of adrenal sensitivity may

find that going cold turkey on carbohydrates may not be something that goes down well for them. So with the caveat of listening.

Dr. Sarah Myhill - [00:30:25]

I can give you the overall principles, as I call it, getting people well is like playing cricket. I can give you the rules of the game and the tools of the trade, it's the same. The rules of cricket are the same, and they all use a bat, and a ball and some stumps and the big field, every single cricketer plays the same. You can recognize different styles just by looking and it's exactly the same. Everybody's got to find their own path to recovery. And that's where therapists like yourself are so helpful because you know what this path is. You've watched patients walk it a million times before and you can guide and prioritize because sometimes these very sick patients don't have the mental energy, they may not have the physical or emotional energy to know what to do and have the determination to push it through. Although I make it sound very easy in general terms, it isn't. It's always a difficult journey. But, I spent four decades doing it wrong. I spent four decades exploring every possible blind alley there is to be explored, at least I know what not to do.

Alex Howard

But I think what's also important about that is the same for the individual on the recovery path, isn't it, that they figure it out by getting it wrong. So you take something that makes sense and you understand what you think you're doing. You do it and your body screams back at you and you figure out why, and that opens up the next step forward. So it's not failure, it's feedback.

Dr. Sarah Myhill

Yes. And that actually raises a very, very important point. To use another analogy, we are walking on the road and those symptoms are our signposts, they tell us where to go. And this is where using symptom suppressing medication is so dangerous because they take away those early warning signs. One of the worst symptom suppressing medication that we use are addictions and addictions are essentially medications, alcohol, nicotine, caffeine and all these drugs. OK, in the short term, we feel a bit better because they take away the symptoms, but they muddy the clinical waters and they cause problems in their own right. And the worst, the most pernicious addiction of all is sugar.

And it's the worst, it's most pernicious because most people don't realize it an addiction. It's socially acceptable. We all do it. Parents use it as a symbol of their love for their child, you'll get a sweetie if you're a good girl. No it's like giving a dose of poison, like giving a dose of cyanide. I don't think so. That's no present at all. That's a straight poison. So the first thing we have to do is get rid of all those addictions, whatever they may be, sugar, alcohol, smoking, caffeine in moderation I think that's acceptable. But be so careful of all the others. And doctors are the same, as soon you start giving somebody painkillers, as soon as you start giving them anti-inflammatories or drugs for depression you are muddying the clinical waters and that is a bar to recovery.

Now, I'm quite sure many people listening to me will be thinking Oh I take those drugs, I better stop them. You can't, treat them as addictions. You have to tear them off very slowly and at the same time and in parallel with that, you put in all these interventions to correct the biochemistry.

Alex Howard

So someone needs to deal with the addictive elements, the way they're masking their symptoms. They need to work with the digestive piece. Where else do people start? What are the other sort of fundamentals that people need to start putting in place?

Dr. Sarah Myhill

Well, of course, what the difference between normal fatigue and pathological fatigue is, is delayed fatigue. So at the end of the day, I feel tired. You know, I have done a day's work, I've sorted out all the stuff outside. And I will come in and I will be tired and I will have a good night's sleep and the next

morning I'll be as right as rain. The patients with chronic fatigue syndrome and ME, they have pathological fatigue. And if they overdo it on one day, they will pay for it the next day. And if you had that delayed fatigue, then there's a lot of tissue damage and there's a lot of mitochondrial rundown, if you like, and so pacing is a very, very important part of recovery.

Again, it's like the athletes. I mean, the way I treat my chronic fatigue patients would be exactly the way I'd treat a top athlete to improve their performance. And top athletes know that if they over-train their performance will decrease. And that's part of the skill. I mean, athletes, you know, they're very driven characters. And they think the more we train, the better will be. But there is a sweet spot in how much they can do. And exactly the same is true of patients with chronic fatigue syndrome. If you don't pace your activity wisely and you pay for it the next day, you will slow your recovery. So pacing is boring, in the early stage when you are not well, you absolutely must do it. And the temptation is, I've got a bit more energy, I'll get that job done, I'll get that done, I'll finish this off. But if, as I say, you pay for it the next day, you're not working efficiently.

Alex Howard - [00:35:38]

And I think the challenge often with pacing as well is when people's lives have been limited for a long time, suddenly they get that bit of taste of energy. And maybe that's because they've been working on their fermenting gut or because they've been balancing out their hormones, whatever it may be. So what they do starts to work, but then the kind of achiever comes in and they sort of sabotage the progress. And actually, I think what can happen is people can think something's not working that is working because they're never giving it the chance to have the impact that it would.

Dr. Sarah Myhill

That's correct. And guess who gets ME and chronic fatigue so much? It's not the lounge lizards. It's not the people who are naturally idle who spend the whole time tootling around looking after themselves. It's the driven characters. And I have had England cyclists, Olympian's, England cricket players, England football players come and see me because they have suddenly developed chronic fatigue syndrome because they've been chronically over-training all their life.

Lovely girl who came to see me recently, Olympic gymnast, fantastic girl. And she developed a severe chronic fatigue, she's just been in a state of chronic overtraining. She's done incredibly well and she's been back in training now, you'd be pleased to hear. But yes, it's the driven characters, mentally driven, physically driven. They're the ones at risk of ME because they ignore those symptoms. They ignore those warnings signs that say, no, stop, rest, sleep. They think more is better. And the harder they train, the harder they work, the better they will be.

The startling thing is how many people can survive for so many years doing that, drive themselves and push themselves, but they will pay for it in the long run with their health.

Alex Howard

I think some severe fatigue stories are actually a miracle that someone managed to go as long as they did before the system crashed. Right?

Dr. Sarah Myhill

I absolutely agree with you. And it's a testament to the spirit, if you like, the force within them.

Alex Howard

Yeah, yeah. So at what stage in the process do you then tend to deal with the immune elements? So we talked about getting the fundamentals in place of not masking symptoms, working with the gut, working with pacing. Yeah. Where does the immune piece come into this?

Dr. Sarah Myhill - [00:37:52]

Well, of course we do all these things in parallel. And just the business of improving energy delivery and the basic package of interventions I put in will have very powerful effects on the immune system anyway, because guess what, as soon as you cut out the sugar and the carbohydrates, you're in a less inflamed state. As soon as you get people up to speed with something like vitamin D, vitamin D is the single most important anti-inflammatory in the body and we're all vitamin D deficient. And that alone, just being vitamin D deficient, will put us in an inflamed state. The major allergens are the gluten grains and the dairy products. Take those out of the diet and you settle down many allergy problems. Action Against Allergy will tell you that about 40 percent of the population have some sort of allergy, i.e. their immune system is busy for no good reason. So all these things that we're doing that are improving energy delivery mechanisms, also impact indirectly on the inflammation, the inflammatory causes.

And of course, As soon as you sort out the fermenting gut, then you've not got microbes spilling over into the bloodstream which drive fibromyalgia, muscle pain, arthritis. So all the things we're already doing will already impact on the inflammation. It's not two separate boxes. The two things are inextricably linked.

Alex Howard

Well, I think also you're speaking to is that often when someone's getting sick in the first place, they're getting in a vicious circle, that something goes out of balance, puts something else out of balance, puts something else out of balance. But there's also virtuous circles on the way to recovery, right. That you fix one thing and it impacts another.

Dr. Sarah Myhill

Correct. Correct. And that's a very encouraging note to feel. And sometimes people come to me and they've got shopping lists of symptoms, as I call it. The clinical waters are very muddy and people want to be told that, well, that's causing this symptom, you do that and it gets rid of it. And it's not like that. Sometimes you just have to take a leap of faith and put in place all these things. And then many symptoms just seem to melt away. The clinical waters, as I call it, become much more obvious.

But the most important part of seeing any patient is talking about the history. How did this happen? How did it start? An incredibly common sequence is that a young child who has colic as a baby, snotty nose, ear infections, tonsillitis, migraine, goes to university, gets glandular fever and ends up with ME. I should think one in five of my patients that is the progression. And those early symptoms are all their allergy symptoms, snotty nose, tonsillitis, sore throats, migraine, maybe arthritis. And then going to university is an incredibly dangerous thing to do.

Alex Howard

Particularly at the moment.

Dr. Sarah Myhill

Because you're away from home so all the kids are homesick, you have been vaccinated with meningitis, so that's a dangerous thing to do, the food is awful. Instead of having good home cooking you're snacking on scraps, everybody's having addictions. They're all going out and drinking too much alcohol, maybe taking drugs. Nobody gets a wink of sleep because they're socializing. The work pressure is there. They're all jumping into bed with each other and getting sexually transmitted diseases, including glandular fever. It's a very dangerous business. And so many of my patients, you know, their ME/chronic fatigue was pretty good at university for that combination of reasons.

Alex Howard

It's a kind of final straw that breaks the camel's back of an already vulnerable and delicate system.

Dr. Sarah Myhill - [00:41:29]

Correct, correct. Yes.

Alex Howard

When it comes to, I know you're an advocate of, there's a lot that people can do to help and support themselves. And you've done an outstanding job over the years of putting out information via your websites and books and so on. When it comes to things like people self medicating supplements, going out and doing things, how does one do that safely? Because I think one of the things that happens is people read websites, read books, they go and buy a load of supplements from Holland & Barrett, they kind of pull them down. How does one carefully navigate that process?

Dr. Sarah Myhill

Well, the first point is that taking nutritional supplements, whether it's vitamins, minerals, essential fatty acids, herbals, is a fabulously safe thing to do. The orthomolecular doctors, and orthomolecular just means the right molecule, reviewed all the literature for death from nutritional supplements since records began, and the deaths from nutritional supplements and herbals and homoeopathics since records began is zero. So the potential for harm is minimal, the only harm you can cause is to your cheque book. So that's the first point.

The second point is those supplements aren't going to do much good at all if you've still got enough of fermenting gut. So always start with the diet. And put the database and then you have half a chance of the supplements working, but of course, consulting people like yourself who are experienced, who walk the path, who say, no, you need to concentrate on this for the gut, that the infection, this for the mitochondria are always going to be helpful because you've walked the path, you have the experience and that is incredibly helpful. But potential for harm from supplements is minimal. And for many people who maybe can't access a therapist or haven't got money to, then the suck it and see method is very acceptable.

But the point here is we all need what I call a basic package of supplements because there's a problem with modern agriculture. There is a one way cycle of minerals from the soil, plants, animals and humans. And we throw it away. And, you know, U.S. Department of Agriculture defra figures will tell you that the mineral content of soils has declined progressively over the last 100 years. In 1916, we had about 500 parts per million of minerals in the soil. It's now less than 50 parts mineral.

So you could be eating the most perfect organic biodynamic diet, everything in place and you would still be mineral deficient because it's just not there in the soil. So we all need a basic pack of good multivitamin, good multi mineral and some essential fatty acids, and vitamin D, we should all be taking regardless of whether you're ill, well, healthy, unhealthy, old, young, it doesn't matter. We should all be doing it just to compensate for the deficiencies in the modern diet.

And then you have what I call the bolt on extras. There's a package for mitochondria. There's a package which might help detoxification, maybe herbal things which will help the gut, which will maybe treat chronic infections or whatever. But that basic package is fundamental to all. And it's not just the case of, shall I take some selenium, shall I take some magnesium, I take some zinc or some boron? You need the whole blooming lot because it just is not there in the soil anymore.

Alex Howard

Sarah, for someone that's watching this that says, I've tried everything, I've taken supplements, I've done digestive work, I don't believe I'm ever going to improve. You've worked with a lot of people that have got to that mindset and being able to see things turn around. What do you say to those people?

Dr. Sarah Myhill

OK, well, getting well is like conducting an orchestra. And, you know, if you want to produce Beethoven's 6th, you've got to have all the players in the orchestra. They've all got to be playing at

the same time. They've all got to be playing in time with each other and they've got to have a jolly good conductor there that's holding it all together. And that doesn't happen like that. It's no good just tuning up the streets to say, let's have a go, oh, you're no good. Forget about you. We'll have a go with the drums and have somebody whacking away in the background. You've got to get the whole lot together. And getting well from this illness is like building a house. And the foundation stones of that house is the diet, the nutritional supplements and the gut function.

And then you build on that and maybe the mitochondria are the walls. But there's no good starting building the walls and the windows and thinking, oh, I hate it, I can't bare it, I'll take that away. Then your foundations then disappear and the whole thing collapses. So, it's, you have to think of it as a whole project and as I say to my patients, this is not a battle, this is a war and it's a war we have to fight for life and it's a war we know we're going to lose. I know one day I'm going to be dead, but I'm enjoying my life at the moment. As I get older, I have to work harder to stay well. We all stumble into new problems whether you fall off your horse and break your neck or whatever, and we have to work our way around it. We all have the potential to live to 120.

In fact, I was delighted to hear on the radio yesterday that there's a French nun who celebrated 117th birthday the other day, and she had picked up COVID-19 and she survived it perfectly well. So she's obviously got a jolly good immune system and she's functioning at a good level. So the point is we have the potential to live to 120 and we don't get there because we mess it up on the way. And it's hard work taking the supplements, doing the right amount of exercise, being disciplined about sleep, but it means that you have a big energy bucket and if you have a big energy bucket then you can have fun spending it. And I do see as I age, as I get older, I might give up running and doing all my things on my horse or whatever, but I want to get good at playing bridge or going on walks or doing more gardening. I want to be physically and mentally and emotionally active because spending energy is having fun and I'm prepared to put a lot of effort into that.

Alex Howard - [00:47:42]

I think that's a great point Sarah. For people that want to find out more about you and your work, what's the best way for them to do that?

Dr. Sarah Myhill

Well, all my information is free on my website so anybody can look at that. There's also details. I've written books about all this stuff, *Ecological Medicine*, the *PK Cookbook*, *The Infection Game*, details they're all on my website, drmyhill.co.uk.

But what has proved popular is I now run workshops and you can buy a ticket for a workshop and I talk all day. From 9:30 in the morning till 4:00 in the afternoon with a break for lunch. And anybody can interrupt at any stage and ask me any questions because the standard work up for chronic fatigue syndrome and ME is now so standard that I can, I don't treat 20 patients in a day, but I can move people forward reliably well, and then when things get complicated, yes they might need to go and see people like you, Alex, I'm not taking on new patients at the moment because I've got too many of my own, but I can at least lay the foundation stones and get you going.

Alex Howard

Sarah, thank you so much. It's always a pleasure. I really appreciate your time.

Dr. Sarah Myhill

My pleasure. Thank you for asking me. Alex.